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L4: Entry 3 of 3

File: USPT

Nov 24, 1998

DOCUMENT-IDENTIFIER: US 5840249 A

TITLE: Preservative for organic materials

US Patent No. (1):5840249Brief Summary Text (10):

At one time waste waxed paper presented problems in the paper recycling industry. When waste wax paper was recycled waxy spots would appear on the resulting recycled paper and a wax coating would collect on the equipment thus fouling the recycling process. Consequently, the resulting recycled paper was considered inferior and it was often necessary to stop the process so that the equipment could be adequately cleaned.

Brief Summary Text (11):

The problem, with recycling waste waxed paper, was solved however by adding a water dispersible non-ionic emulsifiers to the pulper during the repulping phase of the recycling process. The mixture containing the emulsifier is mechanically agitated at a temperature sufficiently high to melt the wax, for example from approximately 150.degree. to 190.degree. Fahrenheit. This process produced an emulsified wax-fiber slurry having a solids consistency of from approximately 4% to 6% by weight. The hydrous cellulose pulp produced in this process for recycling waste waxed paper has the property of an unlimited shelf life. U.S. Pat. Nos. 3,808,089 and 3,822,178, the disclosures of which are incorporated herein by reference, fully discloses the above described process.

Detailed Description Text (2):

During the emulsification phase, of the wax paper recycling process used in practicing this invention, substantial quantities of wax are present from the waste waxed paper. However, this wax does not contaminate or coat the equipment even when slurries containing the emulsified product are cooled. When making waxed paper, very little wax penetrates below the surface of the un-waxed sheet of paper. However, during the emulsification phase of recycling, the paper is broken down into minute fiber filaments having irregularly shaped surfaces. Each of these minute filaments has a substantial surface area. Literally millions of fiber filaments are released from a relatively small piece of wax paper. Consequently, a piece of waxed paper having a waxed surface of 100 square inches, for example, releases fiber filaments into the emulsified slurry that have a surface area that may be as much as 1,000,000 times the original 100 square inches, or 10,000,000 square inches. The wax from the surface of the waxed paper, is melted during the emulsification phase and forms a very thin micro-molecular film on the fiber filaments. In addition to the minute fiber filaments there are numerous microorganisms from the water and other ingredients of the recycling process. The microorganisms would in the usual paper making process cause decommission of the process ingredients. However, in the process of this invention these microorganisms becomes coated with a very thin layer of wax which prevents them from causing decommission of other ingredients found in the process. This hydrous cellular pulp is 95% water, 4.67% fiber and 0.32% wax. The hydrous cellular pulp is then filtered through a 2 micrometer (0.000002 meters) filter and the resulting filtrate is then used as the water base in products such as toothpaste, shampoo, soap, detergent, lotions and cream products.

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L5: Entry 3 of 3

File: USPT

Nov 24, 1998

DOCUMENT-IDENTIFIER: US 5840249 A  
TITLE: Preservative for organic materials

US Patent No. (1):  
5840249

Brief Summary Text (23):

This invention consists of applying the preservative of this invention to chip piles and to new lumber.

Detailed Description Text (4):

The filtrate is free of microorganisms such as bacteria and fungi, possesses an unlimited shelf life, and may be produced either by recycling waste waxed paper, new waxed paper or by processing virgin vegetable constituents in the presence of wax during the emulsification phase of the defibering process.

*search word new*

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L6: Entry 3 of 3

File: USPT

Nov 24, 1998

DOCUMENT-IDENTIFIER: US 5840249 A

TITLE: Preservative for organic materials

US Patent No. (1):5840249Brief Summary Text (9):

Waxed paper is customarily manufacture by forming the paper sheet first then treating the sheet with an application of wax coating, either in dry or liquid form. For example, molten paraffin wax is easily applied by continuously passing a paper sheet through a molten bath of wax, removing the excess and then chilling. Such waxed papers have excellent resistance to water vapor, are free from odor, taste and toxicity and are low in cost.

Detailed Description Text (6):

In accordance with this invention, an example of the starting waxed paper that can be used is the type used in bakeries and deli-contestants to wrap food products. Waxed paper of this type is coated with a food grade paraffin wax, designated as a dry wax. Waste waxed paper can be used in the preferred embodiment and is obtained directly from the paper producing facilities. For example, trimmings from a trimming machine or wax paper that did not meet required test standards may be used. Such waxed paper is free of printing and thus is clean. The waxed paper is added to a pulper. A pulper is basically a vat for receiving a material that can be agitated by mechanical means and includes means to control the temperature. The process of pulping is essentially one of separating cells from intercellular material. It should be understood that any equipment such as a conventional high speed pulper may be used. The temperature of the wax-containing fiber slurry is raised to a temperature above the melting point of the wax and beating is continued until the wax and fiber are released into the aqueous solution. The resulting water-fiber slurry can then be subjected to a washing process to remove any impurities. Newly manufactured wax paper does not need this washing process.

Detailed Description Text (7):

The process of the present invention encompasses the use of 100% waxed paper stock having a wax content of up to 30% by weight. However, non-waxed waste paper, in modest proportions can be used without affecting the outcome. Non waxed fiber products can be used as a starting product and a paraffin wax in the correct ratio to fiber added. The use of waxed paper as a starting point has the advantage that it contains the proper ratio of fiber to wax and it is available at economical rates.

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L7: Entry 2 of 3

File: USPT

Nov 24, 1998

DOCUMENT-IDENTIFIER: US 5840249 A  
TITLE: Preservative for organic materials

US Patent No. (1):  
5840249

Detailed Description Text (10):

Potassium sorbate, in powder form, is then mixed with the filtrate, at a ratio in the range of 0.1%-5% by weight, and citric acid is added until the pH is 6.5 or below. The term pH indicates the hydrogen ion concentration of a solution, which is a measure of the solution's acidity. The pH of pure water is 7.0. If acid is added to pure water, an excess of H<sub>3</sub>O<sup>+</sup> ions is formed and the acid solution has a pH ranging from 6 for a weak acid to 1 for a strong acid. Inversely, a basic solution has a low concentration of H<sub>3</sub>O<sup>+</sup> ions and an excess of OH<sup>-</sup> ions, and the pH ranges from 8 for a weak base to 14 for a strong base. Thus, the resulting preservative is a weak acid. The mixture is blended to suspend the potassium sorbate evenly throughout the filtrate.

## CLAIMS:

1. A process for producing a preservative for applying to organic matter that will prevent the decomposition of the organic matter and enable it to be used for industrial purposes, comprising the steps of:

producing a decomposition resistant hydrous cellulose pulp, the individual fibers of which are coated with a thin wax film;

(a) filtering the decomposition resistant hydrous cellulose pulp through a very fine filter;

(b) adding potassium sorbate to the filtrate at a ratio of one part of filtrate to potassium sorbate that is in the range of 0.1% to 5% by weight;

(c) adding citric acid to the mixture in amounts to reduce the pH to 6.5 or lower.

22. A preservative for organic matter comprising: a filtrate of a decomposition resistant hydrous

cellulose pulp material;

potassium sorbate, in the range of 0.1%-5% by weight of the filtrate; and

citric acid sufficient to lower the pH to 6.5 or lower.